

- 22 -

CLAIMS:

1. Communication server for delivering data streams to a remote destination over a communication network, the server comprising a replacement unit for replacing pieces of data from intended incoming data streams to be
5 received from a remote sender by identical data pieces retrievable from a data storage accessible thereto, according to references supplied by the remote sender; characterized by an identification unit for identifying the pieces of data to be replaced according to a digital signature that is a function of data contained in
10 said pieces, and by an anchor-determination unit for determining locations in the data streams where predefined groups of characters from the stream fulfill a predetermined criterion, the locations of such groups being reference points to the digital signatures.
2. Communication server according to claim 1, further comprising messaging unit for notifying a remote sender to stop delivering intended
15 incoming pieces of data which are retrievable from a data storage accessible thereto.
3. Communication server according to claim 2, wherein the remote sender is a PC delivering data.
4. Communication server according to anyone of claims 1 to 3, wherein the
20 pieces of data are packets of TCP/IP transmission protocol.
5. Communication server according to anyone of claims 1 to 4, further comprising a data storage accessible thereto, wherein the packets are stored in the data storage in blocks of variable size which is determined according to anchor location on the original data stream.

- 23 -

6. Communication server according to anyone of claims 1 to 5, wherein the digital signature is based on any of CRC, SHA1 or DES computed value of a predetermined number of bytes from a selected piece of data.
7. Communication server according to anyone of claims 1 to 6, wherein the
5 digital signature is calculated from a predetermined number of bytes of data, the location of said bytes in the stream of data is in correlation with at least one anchor, and the anchor is a pointer to a location in the stream of data having a compatibility with a predetermined criteria.
8. Communication server according to claim 7, wherein the criteria is a
10 function of data contained in said pieces of data and is independent of a title, address or routing information of said data.
9. Communication server according to claim 8, wherein the function is responsive to a predetermined character combination such that an anchor is assigned upon recognition of said character combination.
- 15 10. Communication server according to claim 9, wherein the character combination is a short string of predefined characters.
11. Communication server according to claim 9, wherein a set of anchors is assigned to a piece of data, each anchor from the set is in correlation to an n-tuple location in said piece of data wherein the function is a hash function yielding a
20 predefined value over the n-tuple.
12. Communication server according to claim 11, wherein the hash function is selected from the group containing LFSR, CRC, SHA1, DES, and MD5.
13. Communication server according to anyone of claims 1 to 12, wherein the files are delivered through P2P communication.
- 25 14. Method for delivering data streams over communication networks, the method comprising determining reference points in a stream of data being

- 24 -

locations in the stream where predefined number of characters fulfill a predetermined criterion; registering digital signatures being values returned from a predetermined function taken over predefined ranges of content, the ranges are in correlation with the reference points; using the digital signatures to locate
5 locally stored content, and using the reference points or creating a dictionary and using it for synchronizing between currently received pieces of data and between locally stored matching content.

15. A computer readable media containing instructions for controlling a computer system to implement the method of claim 14.
- 10 16. System for reducing transportation volumes over communication networks, comprising at least one communication server as defined in anyone of claims 1 to 13.